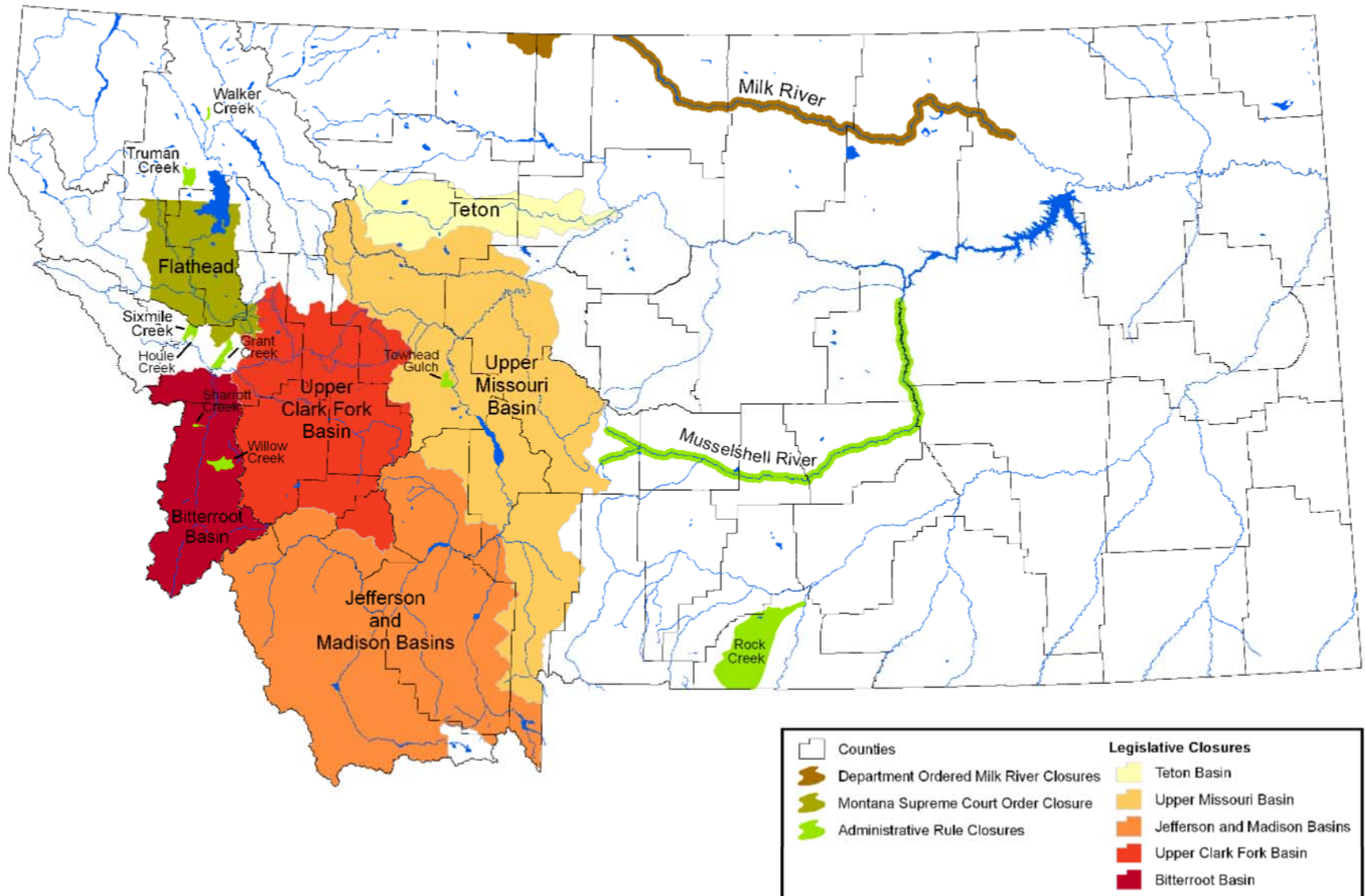


WATER DEMANDS IN CLOSED BASINS

- Surface Water in Closed Basins
- Ground Water – Surface Water Connections
- Future: Mitigation and Storage

Montana Basin Closures

July 2008



Hydropower Rights Control Mainstem Flows



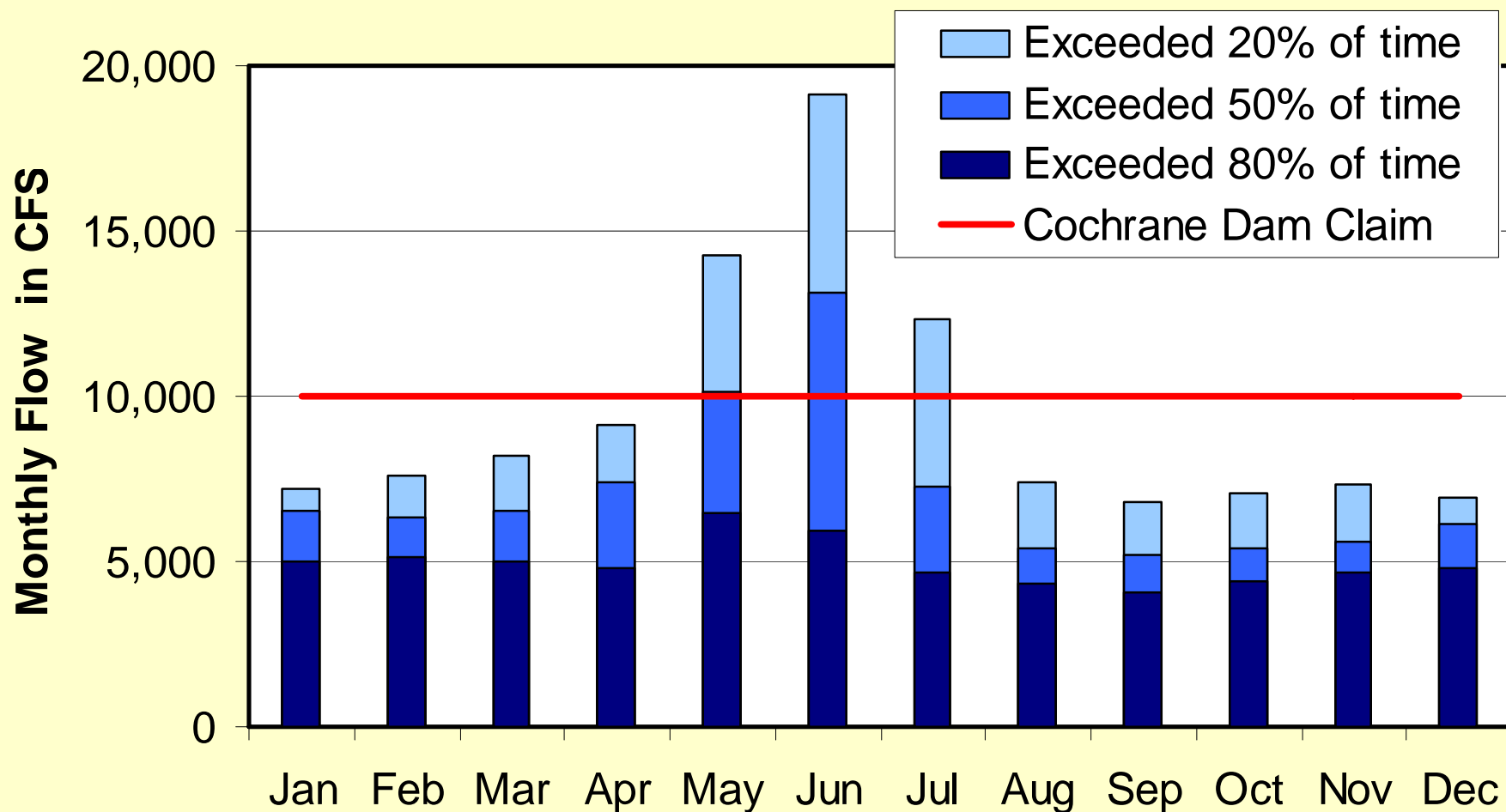
- Noxon Rapids Dam – Avista Corp.
- 35,000 cfs – 1951 Claim
- 5,400 cfs – 1959 Claim
- 15,000 cfs – 1974 Permit
- 460 Mega Watts

Excess Water is only Available 23 Days a Year

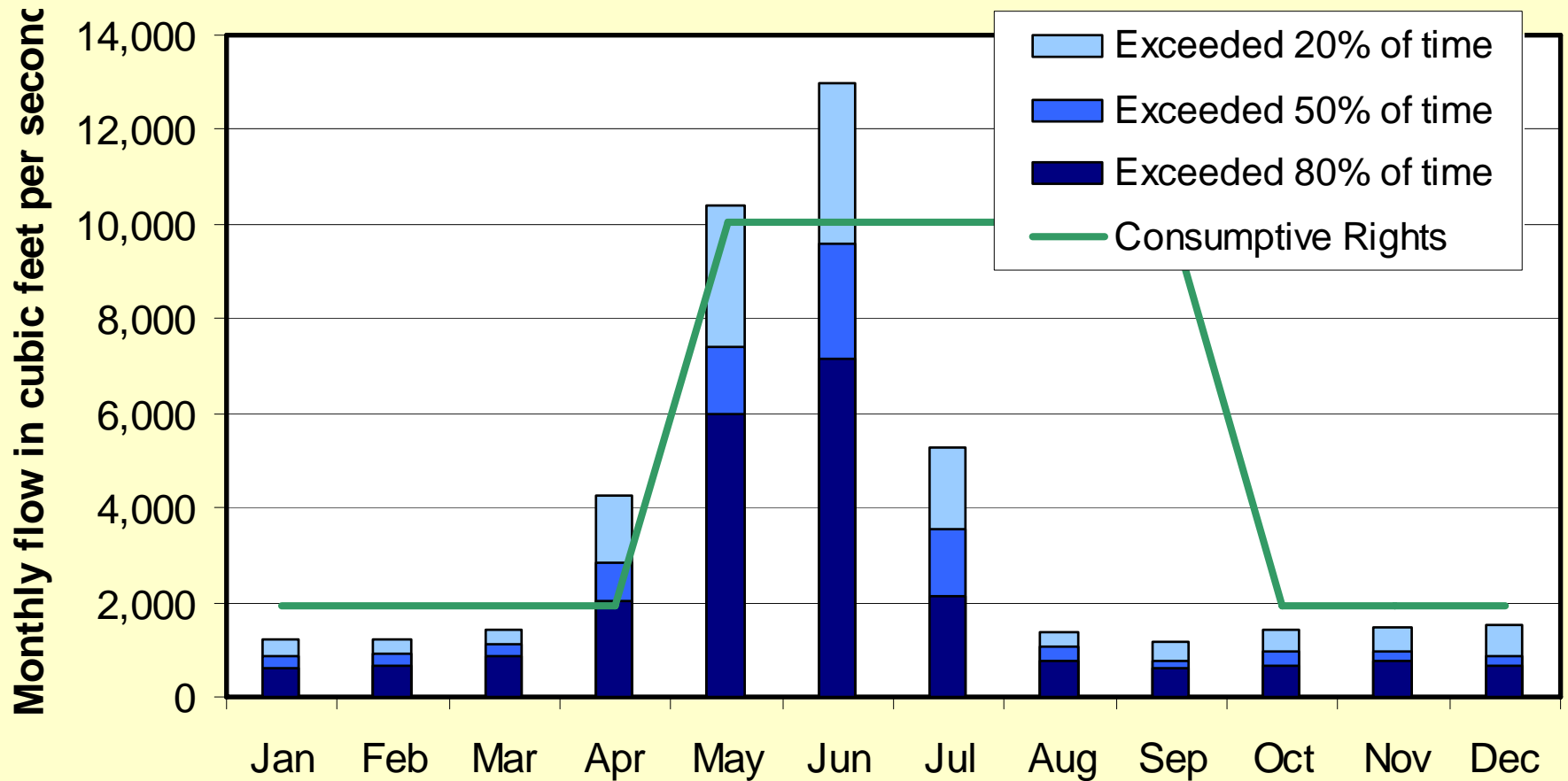
Morony Dam near Great Falls



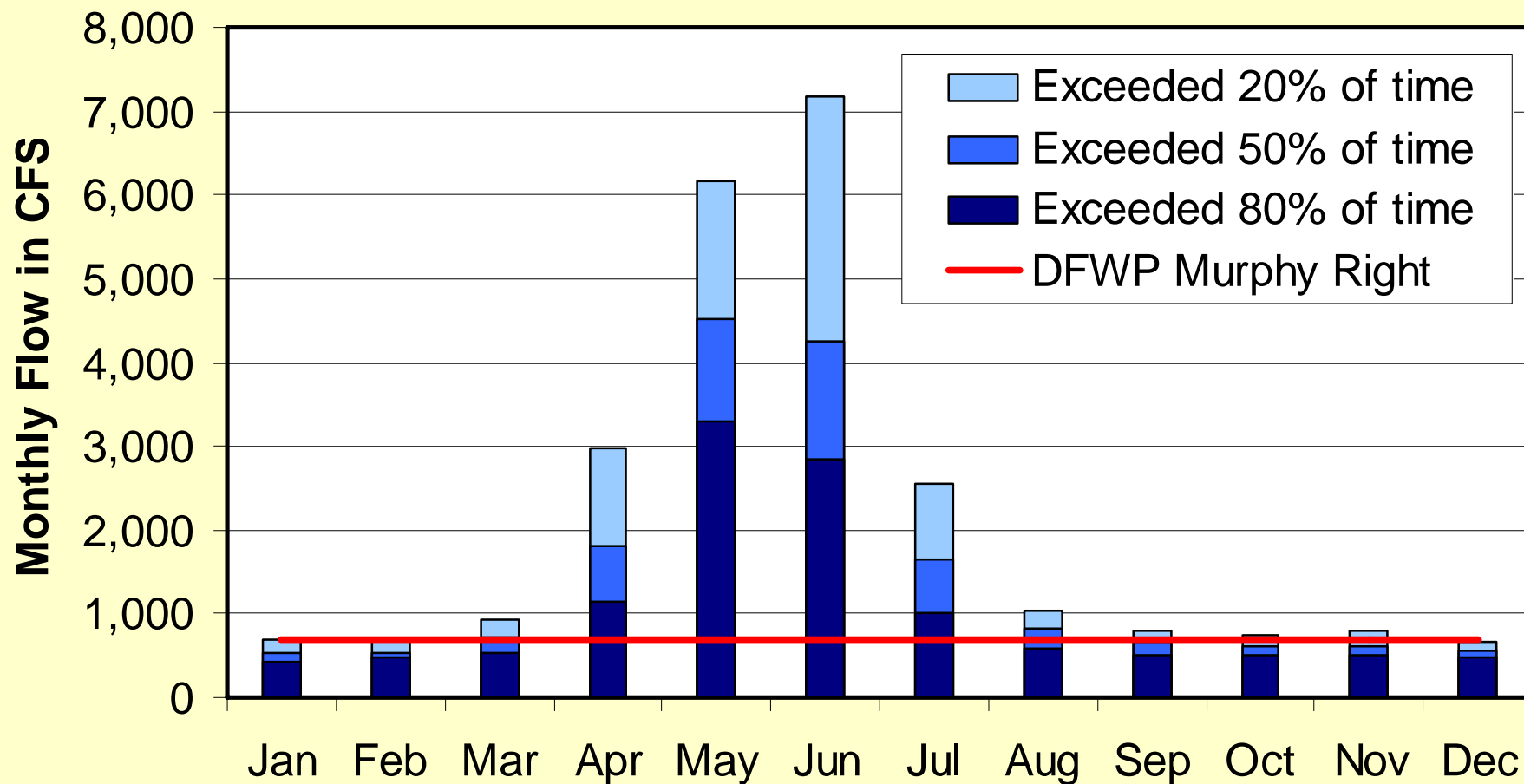
Missouri River near Great Falls Monthly Flows Compared to Cochrane Dam Hydropower Claim



Bitterroot River near Mouth Estimated Natural Flows Compared to Consumptive Claims and Rights



Blackfoot River near Bonner Monthly Flows Compared to DFWP Murphy Right





Bridge Over Teton River near Loma 2006



(photo courtesy of Steve Custer, MSU)

West Gallatin River channel near Forest Park Subdivision (west of Zoot)



(photo courtesy of FWP)

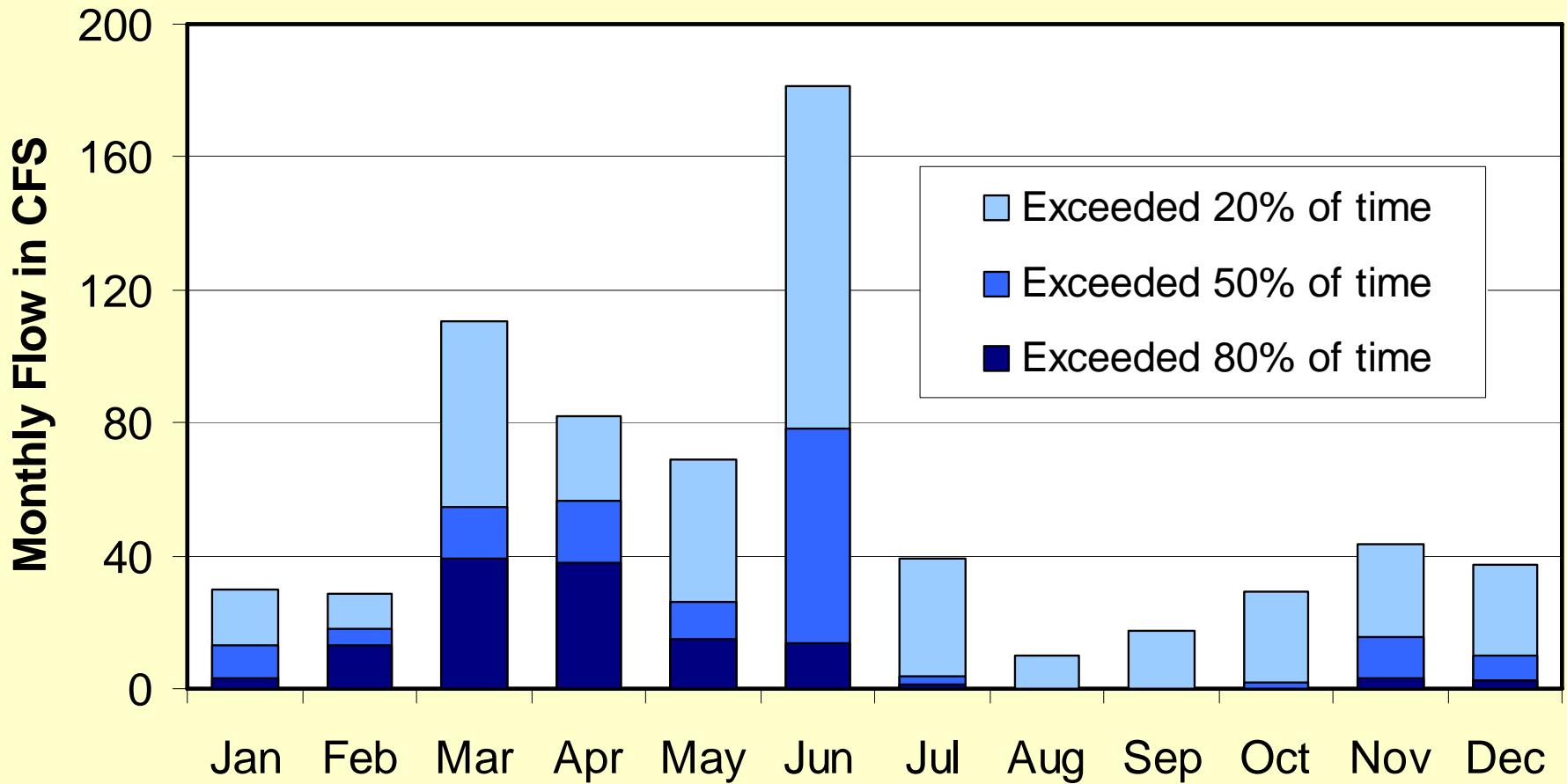
Lower Smith River irrigation diversion
2000



July 31, Flow ~ 31 cfs

Jefferson River at Waterloo – 31 cfs

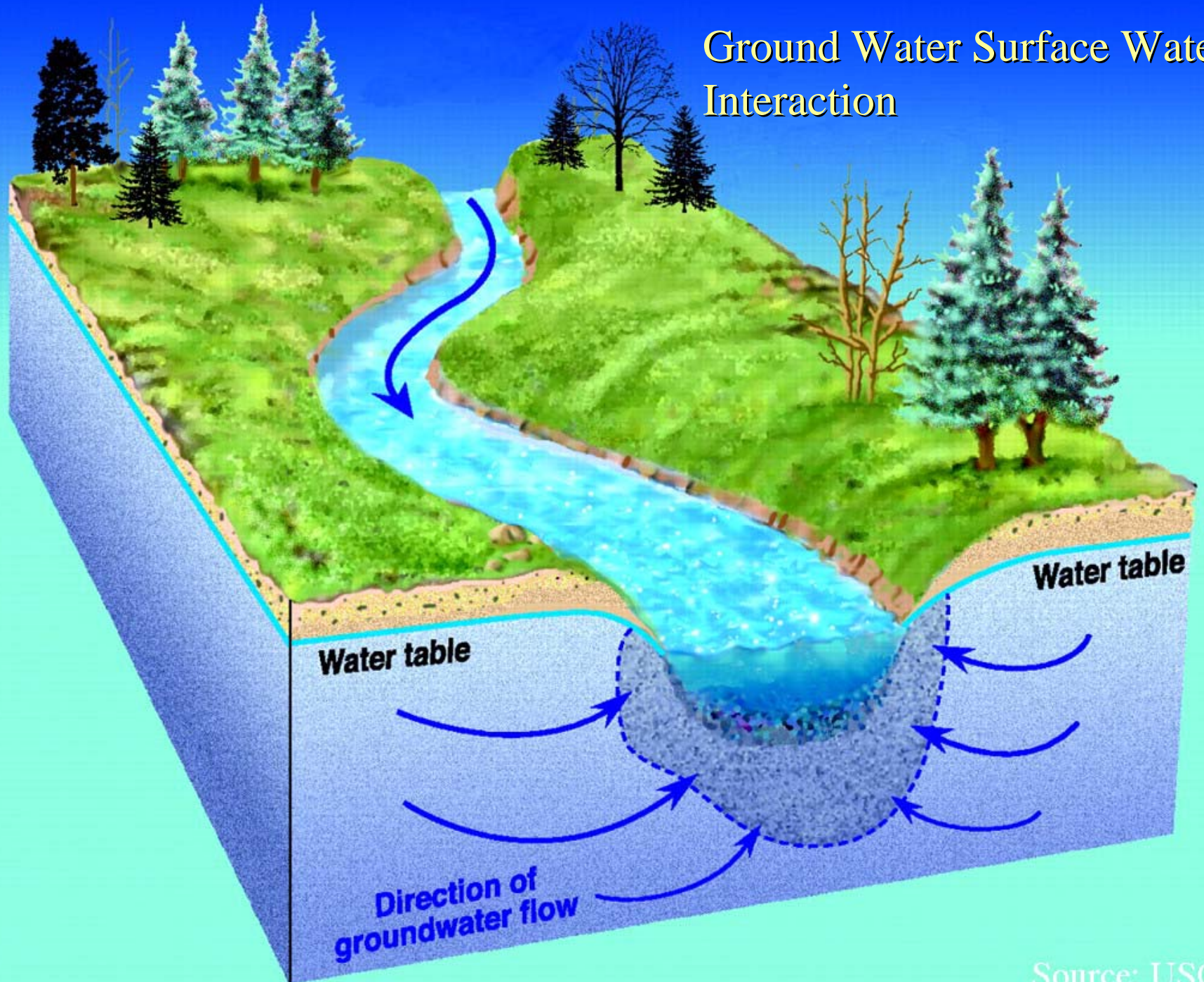
Teton River at Loma Monthly Flows



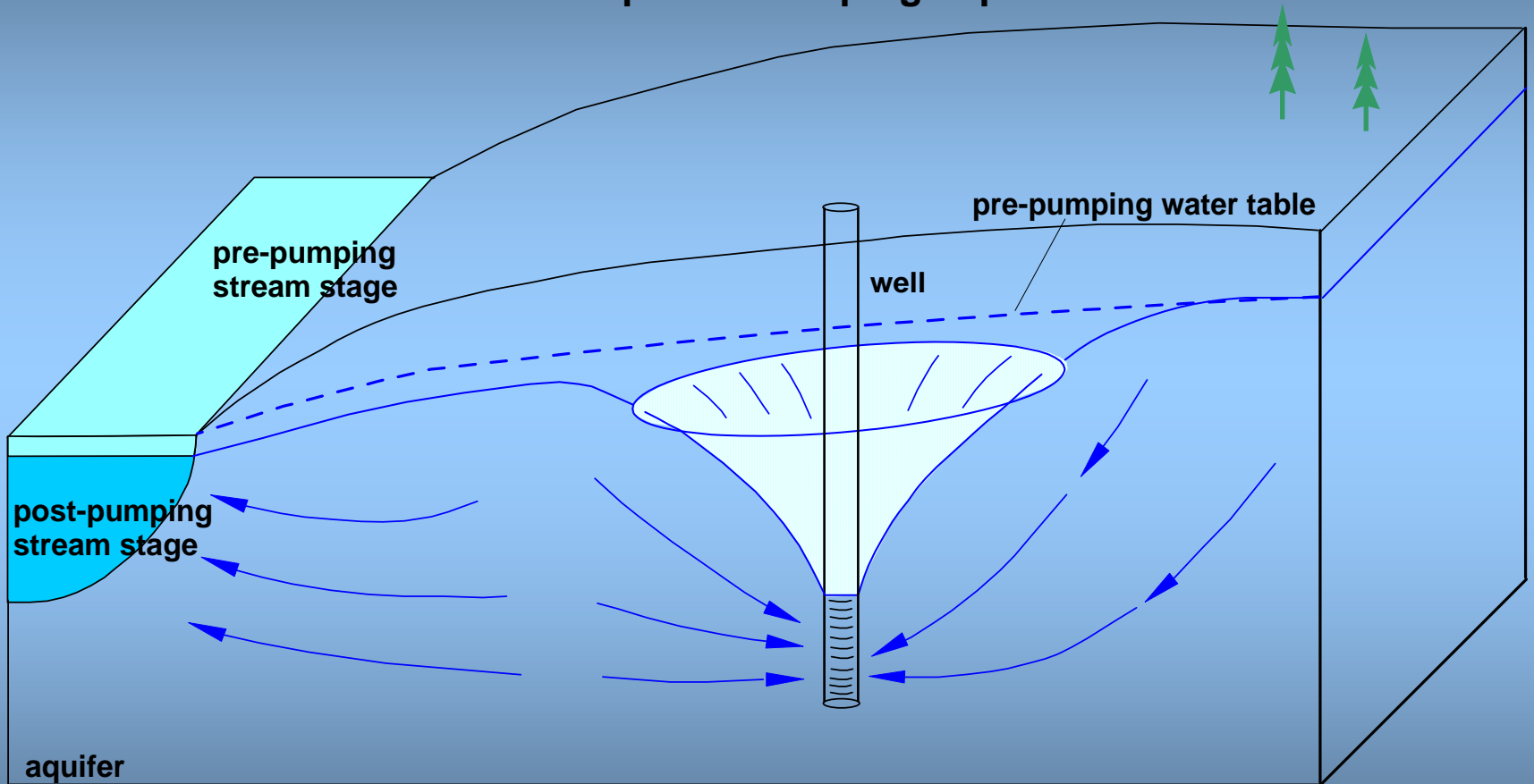
Water Commissioner Priority Allocation Actions during July 2008

	2008 July Shut-Offs	
<u>Stream</u>	<u>Water Commissioner</u>	<u>Priority Date</u>
West Gallatin River	Alberda	1890
Musselshell River	Marchi	1892
Tenmile Creek near Helena	Tordale	1870
Rock Creek (Big Hole Drainage)	Boetticher	1886
North Fork Smith River	Hochstradt	1878

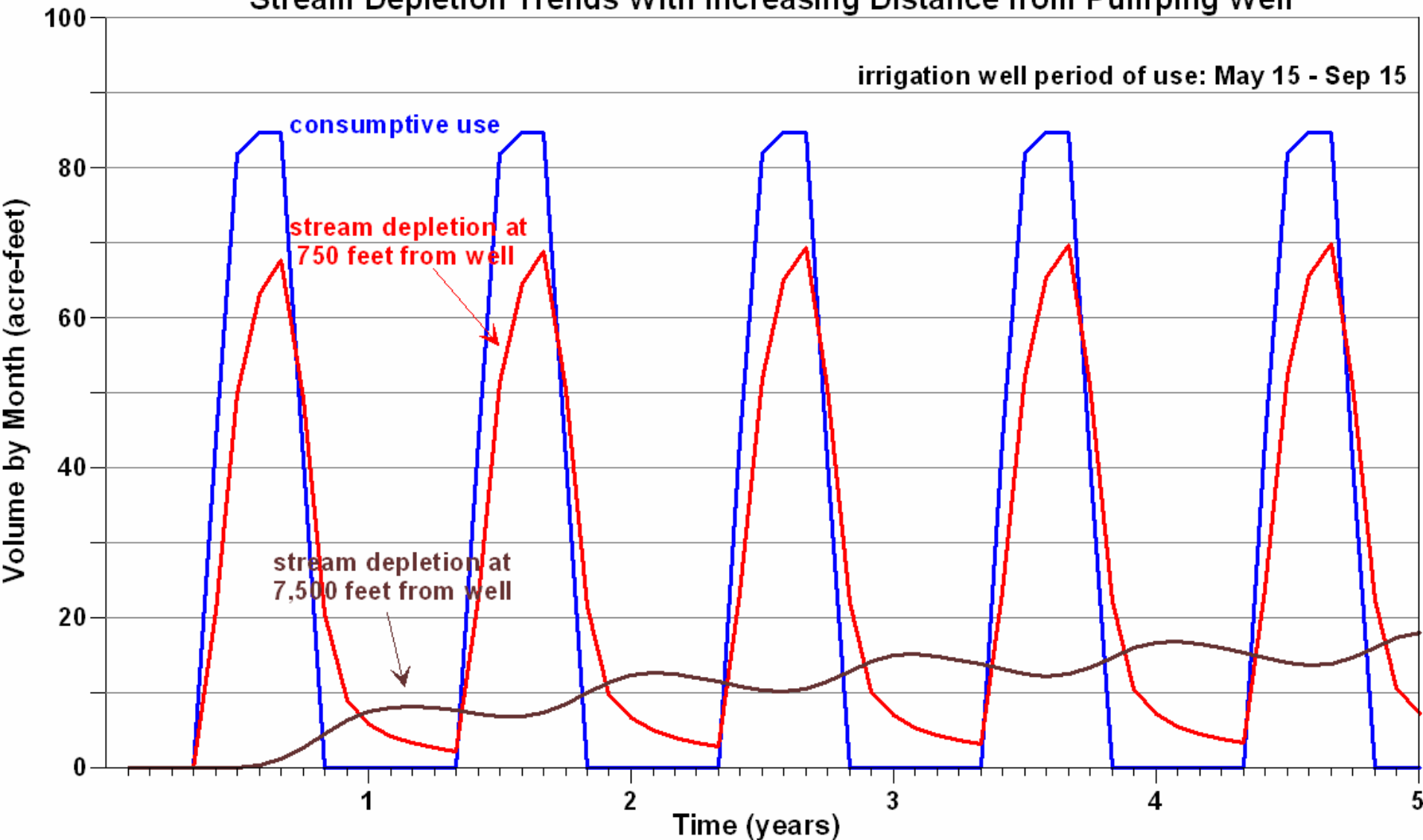
Ground Water Surface Water Interaction

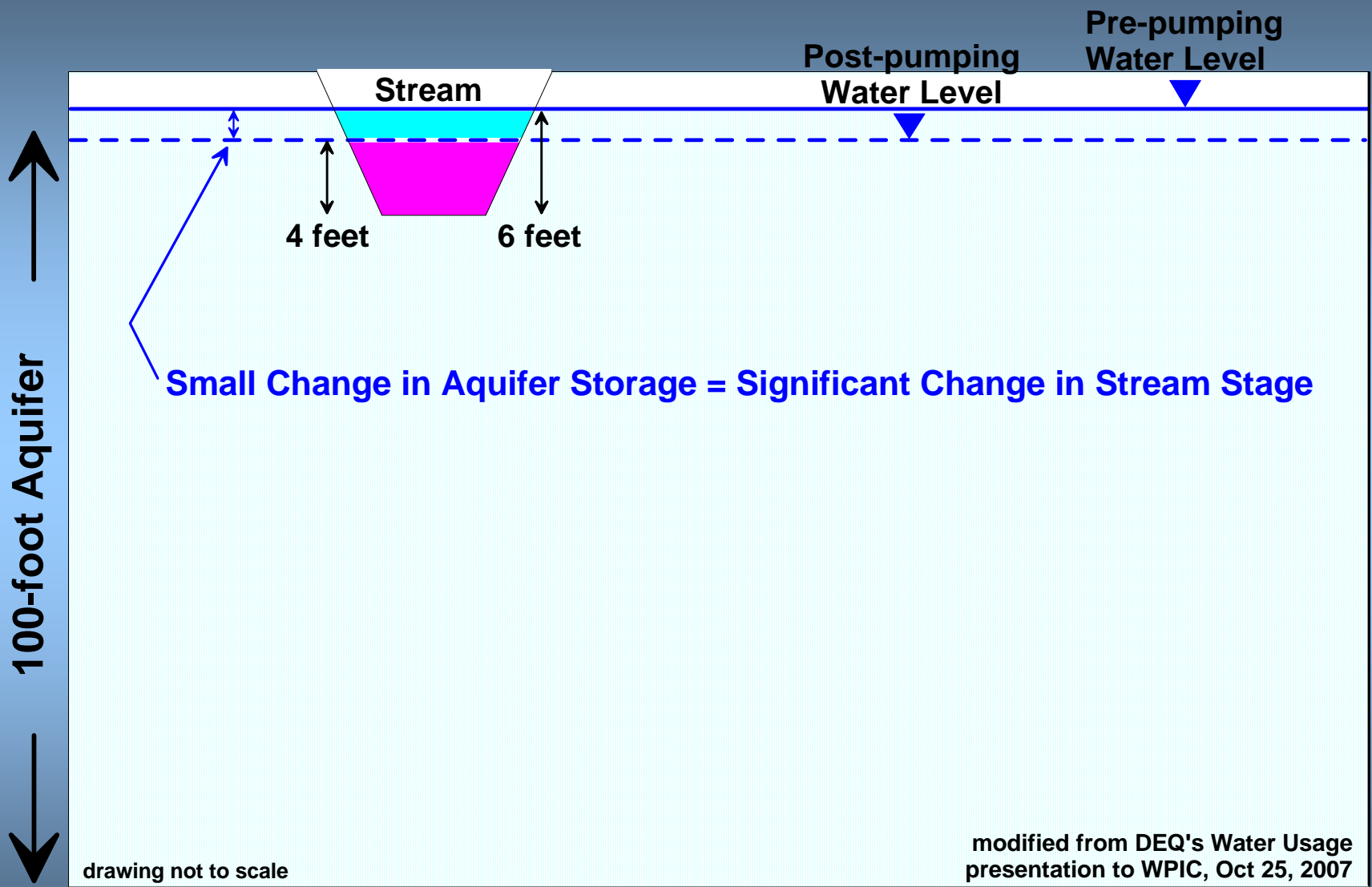


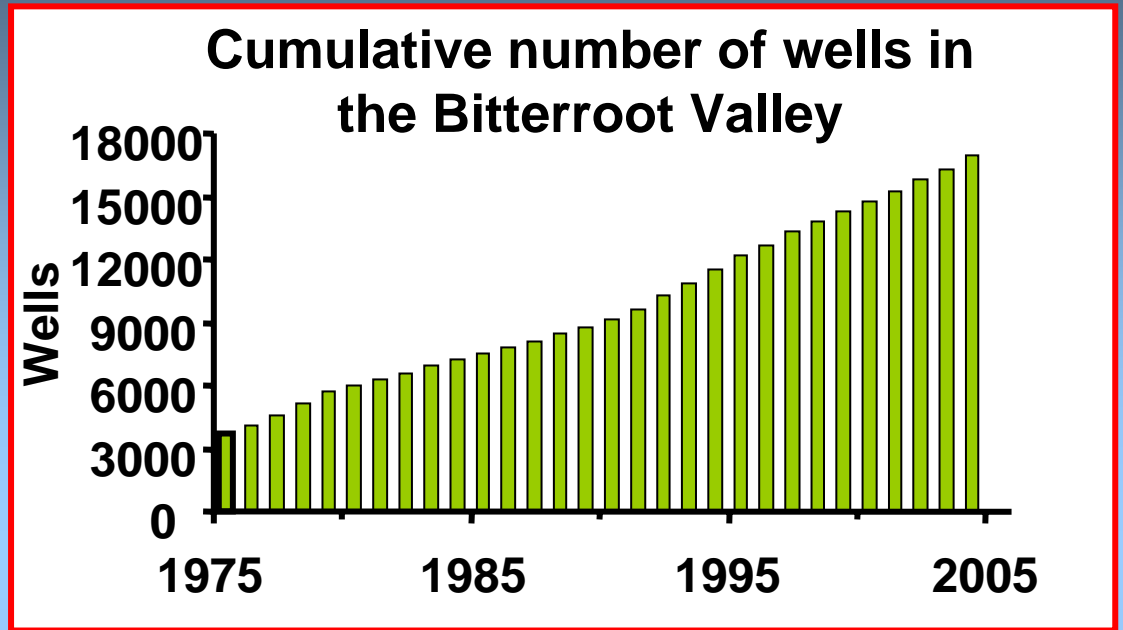
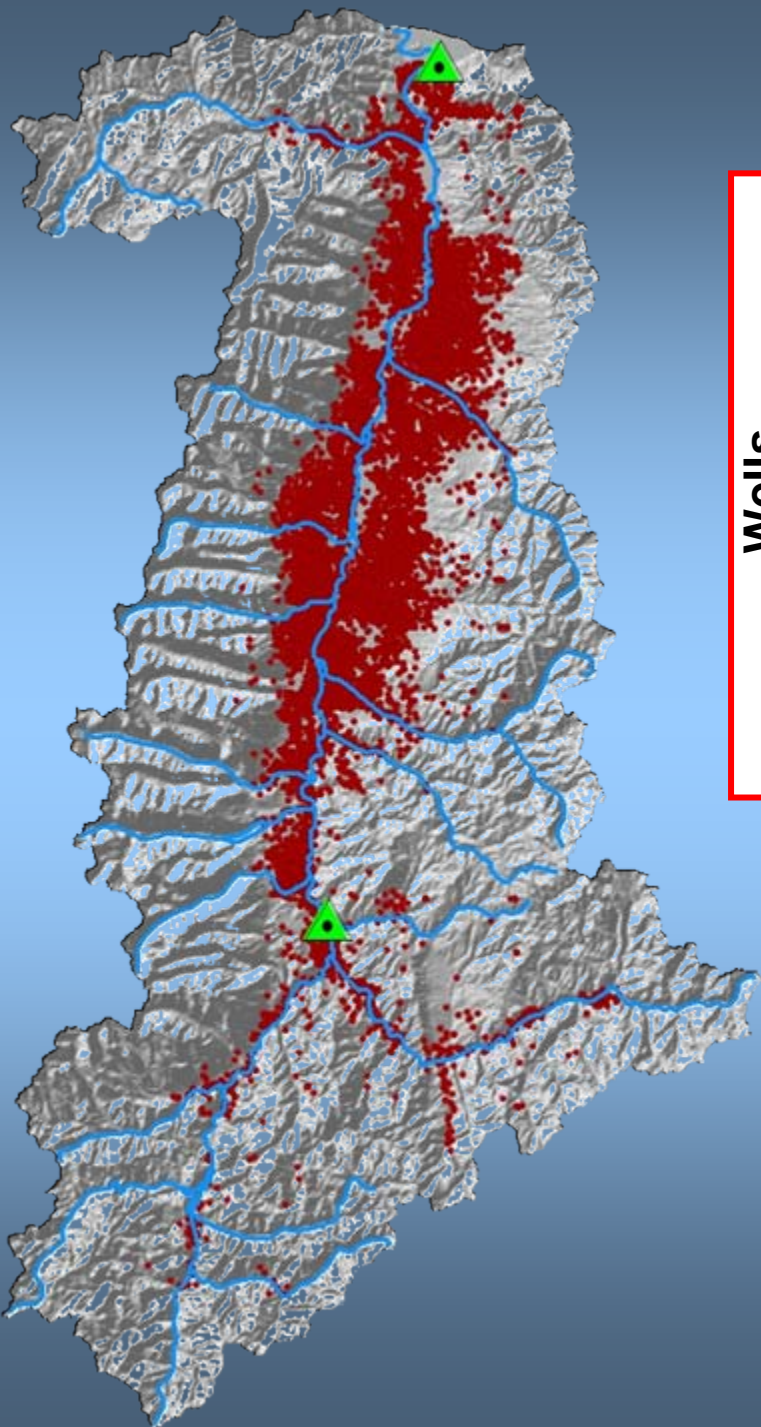
Pre-Stream Capture - Pumping Impact on Stream



Stream Depletion Trends With Increasing Distance from Pumping Well

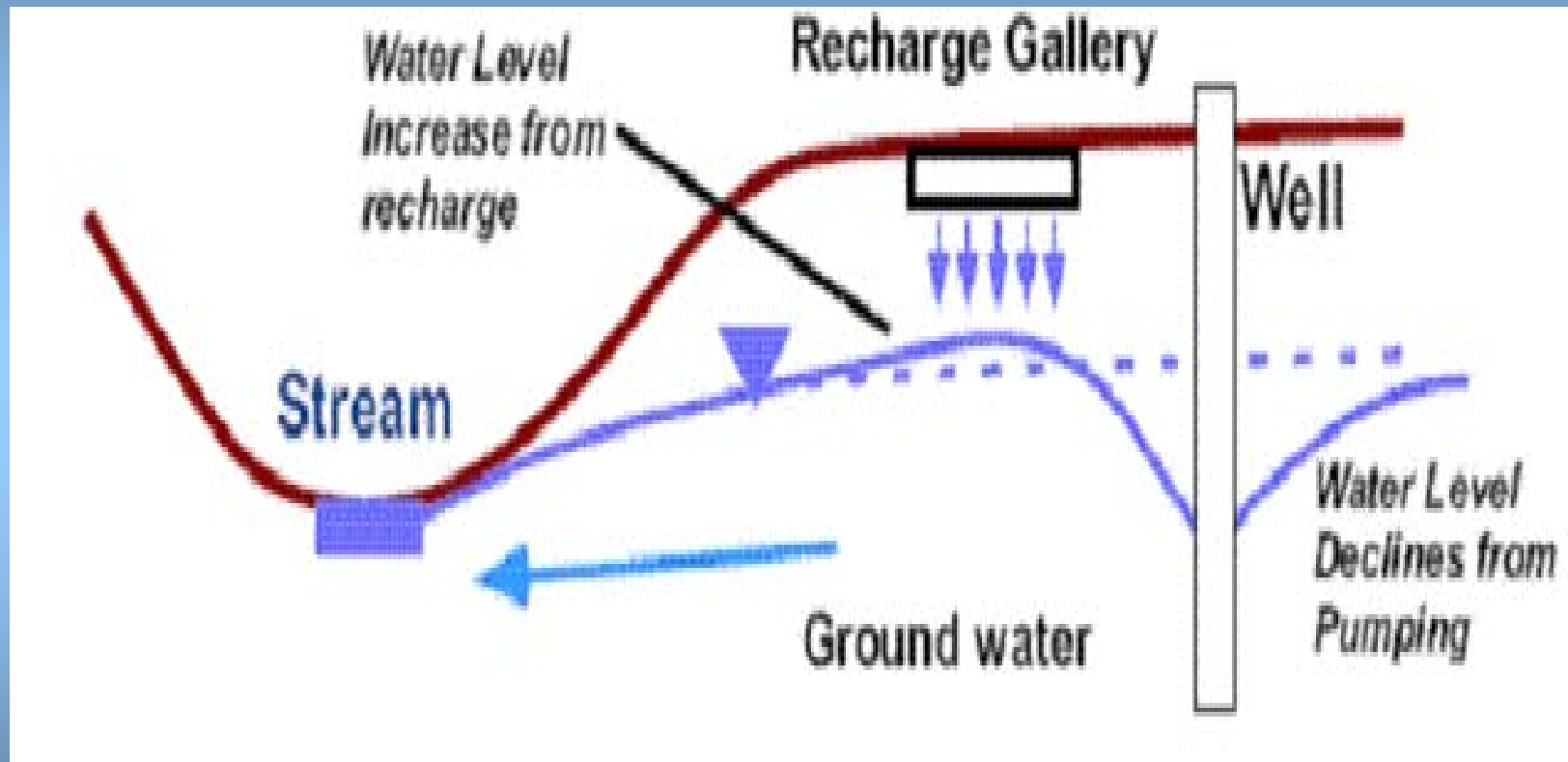






Mitigation Recharge Gallery

(Utility Solutions, LLC)



Leaving Water Instream



- Mitigates Seasonally
- May provide water in critically short periods
- Only as good as the underlying right.

Federal Water Storage Projects



- Hungry Horse Dam
100,000 Acre-Feet



- Canyon Ferry Dam
Reclamation Contracts



- Yellowtail Dam
Reclamation Contracts



- Ruby Dam
 - Existing Storage 37,642 AF
 - Proposed (7' increase in crest) 45,115 AF

Key Points for Closed Basins

Availability

- Existing water rights exceed available flow.
- Even in Wet Years Instream Flow Shortages Occur.

Ground Water

- Consumptive Use of Ground Water Results in Stream Depletions.
- Depletion to Stream Flows Occur Over Time.

Future:

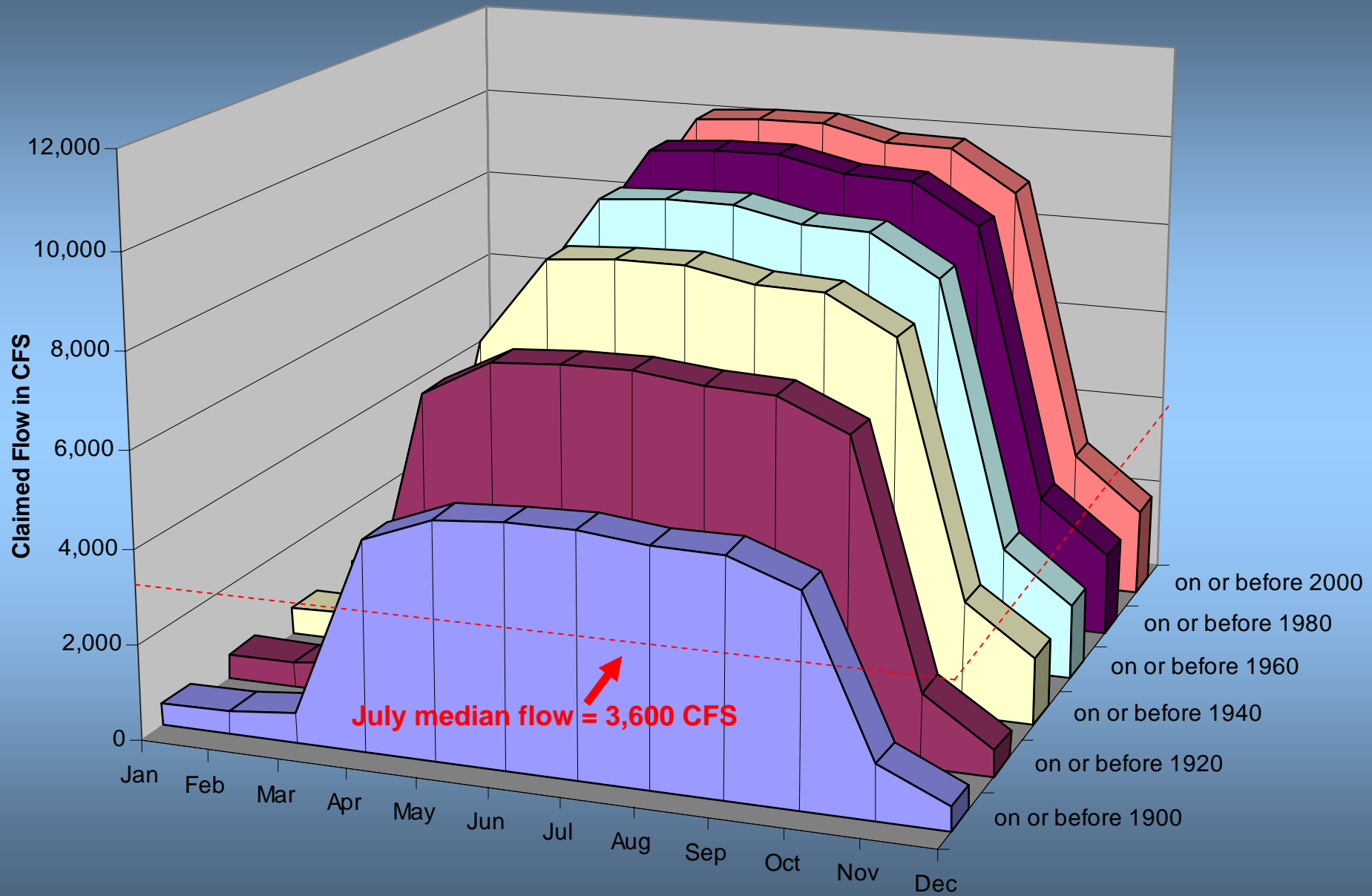
Mitigation

- Aquifer recharge
- Instream flow

Storage

- Federal Storage Projects
- Rehabilitation of Existing Dams

Claimed and Permitted Flow Rates of Consumptive Water Rights in the Bitterroot Basin



An aerial photograph of a river watershed. The river flows from the bottom center towards the top left. The landscape is a mix of green forested areas and brownish-grey cleared or agricultural land. A straight road or path runs horizontally across the upper third of the image. A red arrow points from the text 'Geologic Control' to a specific spot on the riverbank where the river turns slightly to the left.

Upper Smith River Watershed

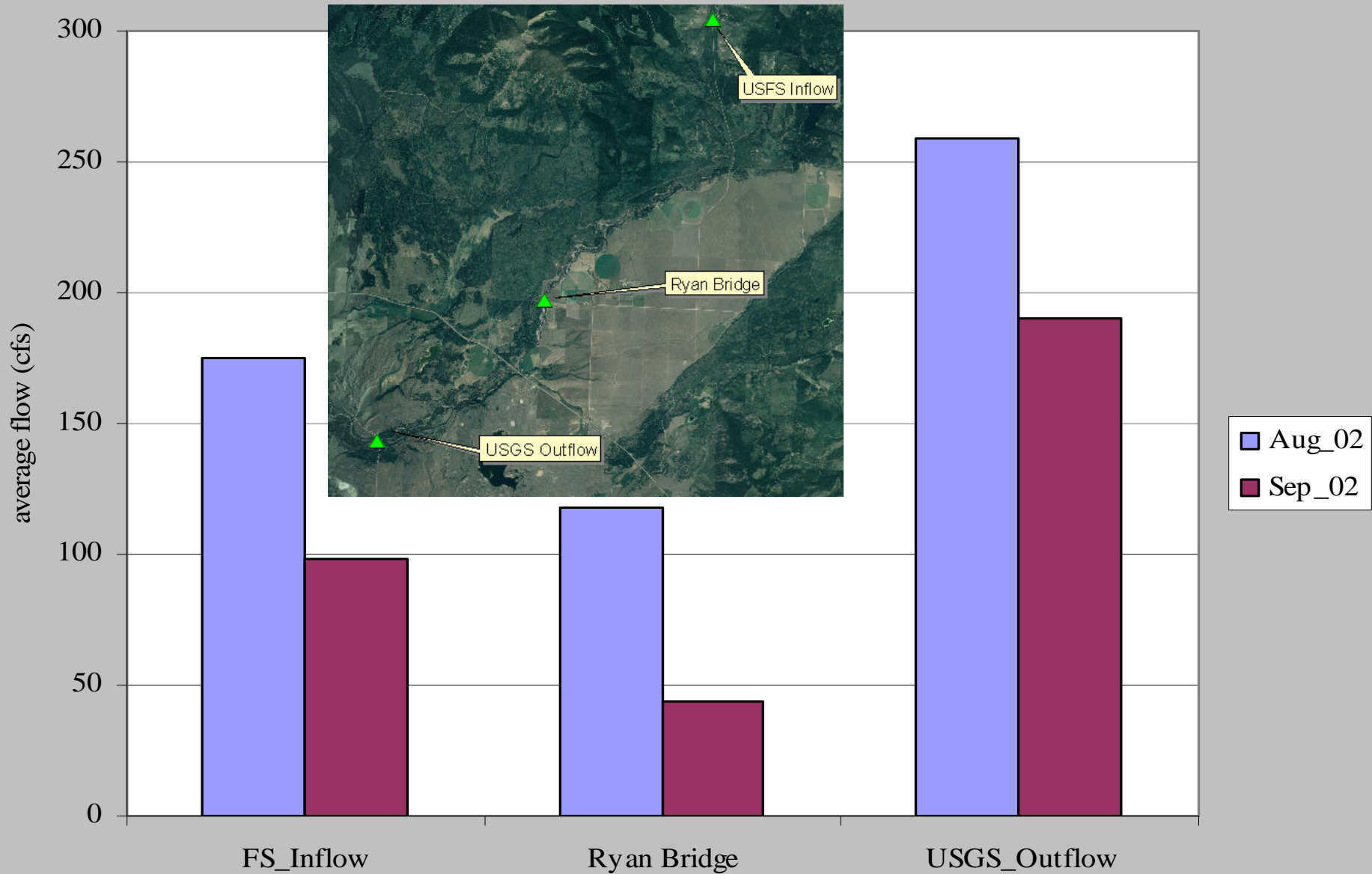
Geologic Control

Bedrock Knickpoint (Notch) on Smith River West of White Sulphur Springs



North Fork Blackfoot River

2002 Monthly Flows



Montana's Exception to the Permit Process for Wells:

85-2-306 (5) An appropriation under subsection (4) is an existing right, and a permit is not required. However, the department shall acknowledge the receipt of a correct and complete filing of a notice of completion, except that for an appropriation of 35 gallons a minute or less, not to exceed 10 acre-feet a year, the department shall issue a certificate of water right. If a certificate is issued under this section, a certificate need not be issued under the adjudication proceedings provided for in 85-2-236. (MCA)

Domestic Wells No Longer A Given

Journal Staff Writer

A state court this week threw out New Mexicans' longstanding legal right to drill a domestic water well without having to worry about whether it would leave less water for their neighbors. The ruling is a victory for activists who say that uncontrolled domestic well drilling poses a long-term threat to New Mexico's ability to manage its dwindling water supplies.

N.M. engineer appeals ruling on domestic well law

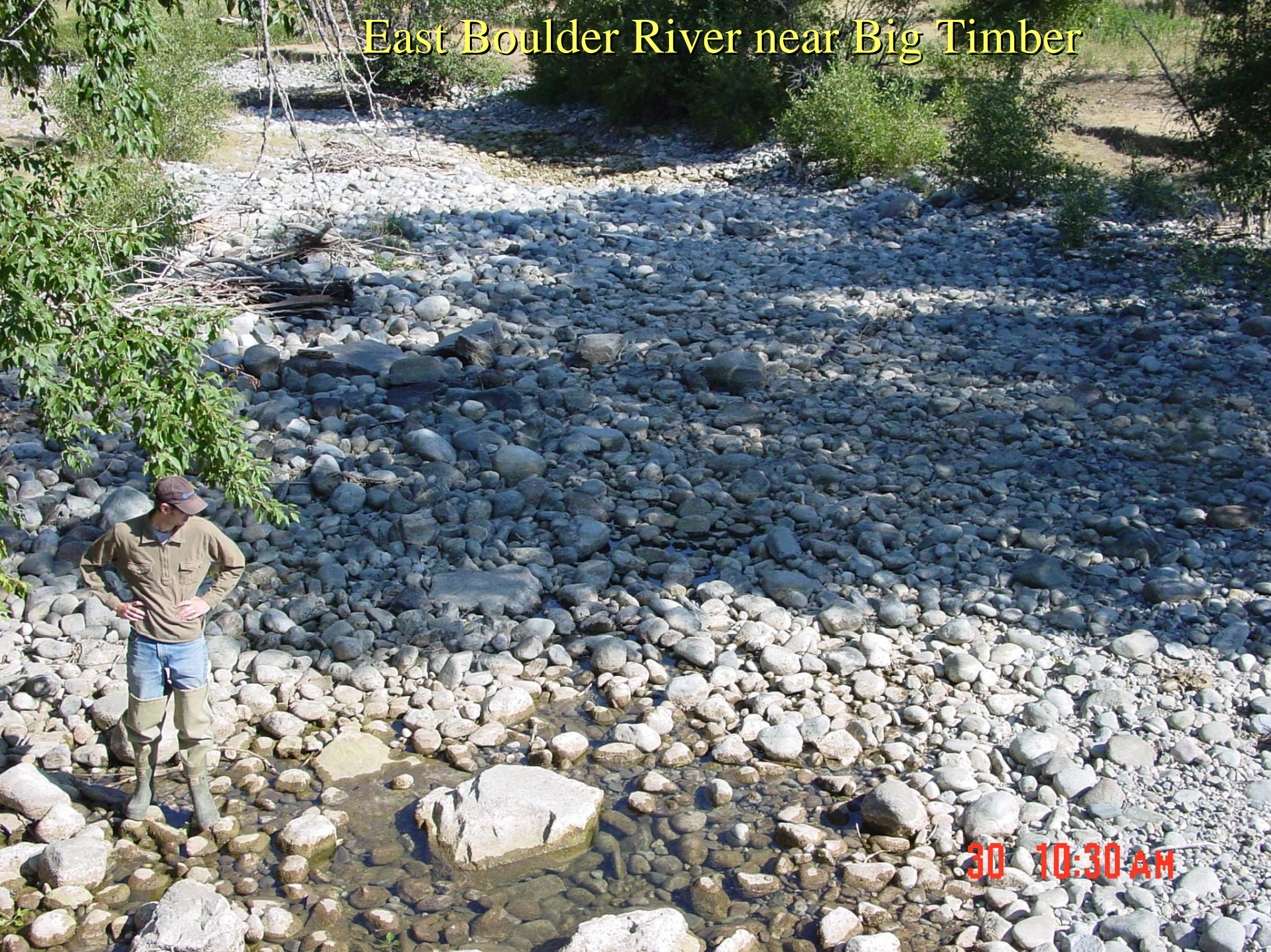
The Associated Press

Article Launched: 07/24/2008 05:09:26 PM MDT

SANTA FE—New Mexico State Engineer John D'Antonio has appealed a recent district court decision that found the state's domestic well law unconstitutional.

D'Antonio said in a news release that he appealed the decision to the state Court of Appeals on Thursday because laws enacted by the Legislature are presumed to be constitutional. The appeal was needed to ensure that the legal basis of the law is fully deliberated, the release said.

East Boulder River near Big Timber



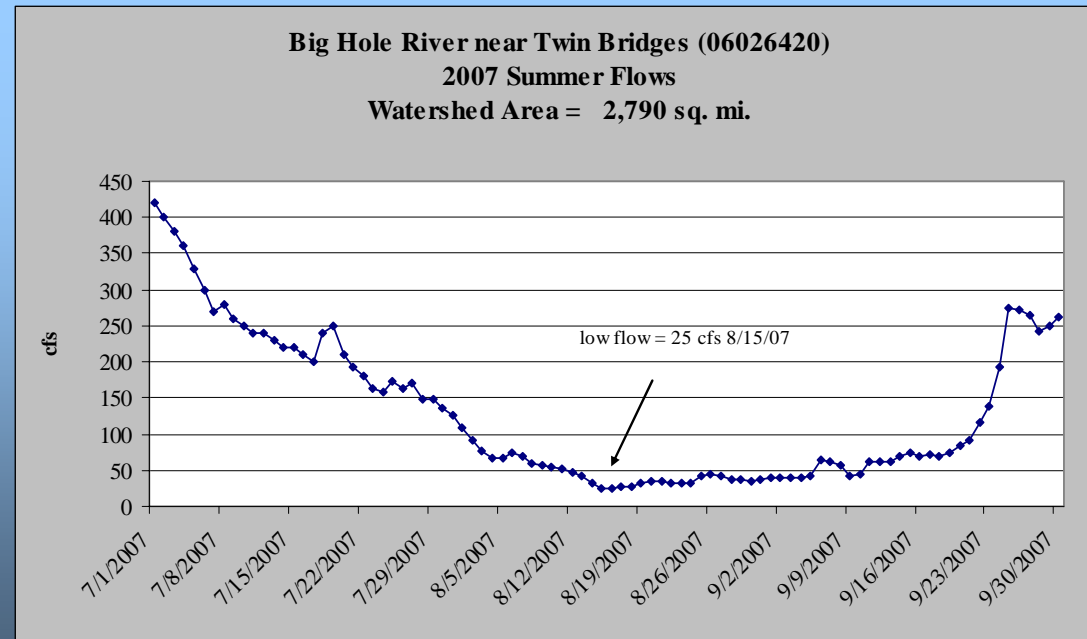
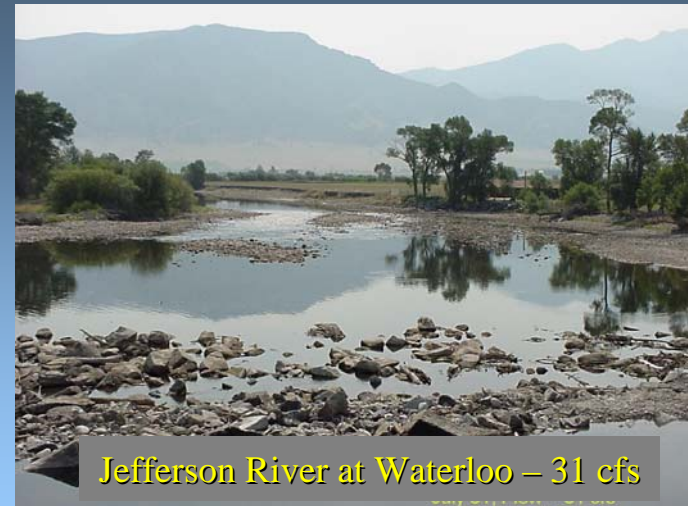
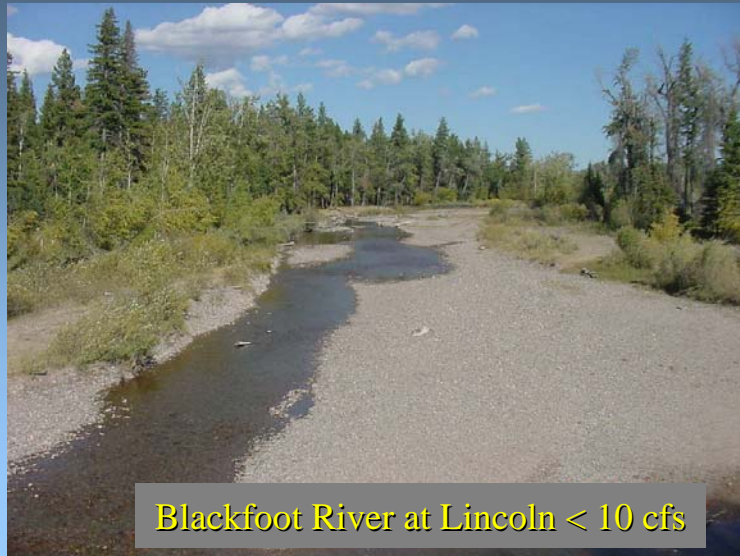
30 10:30 AM

Ruby River Reservoir

September 2007

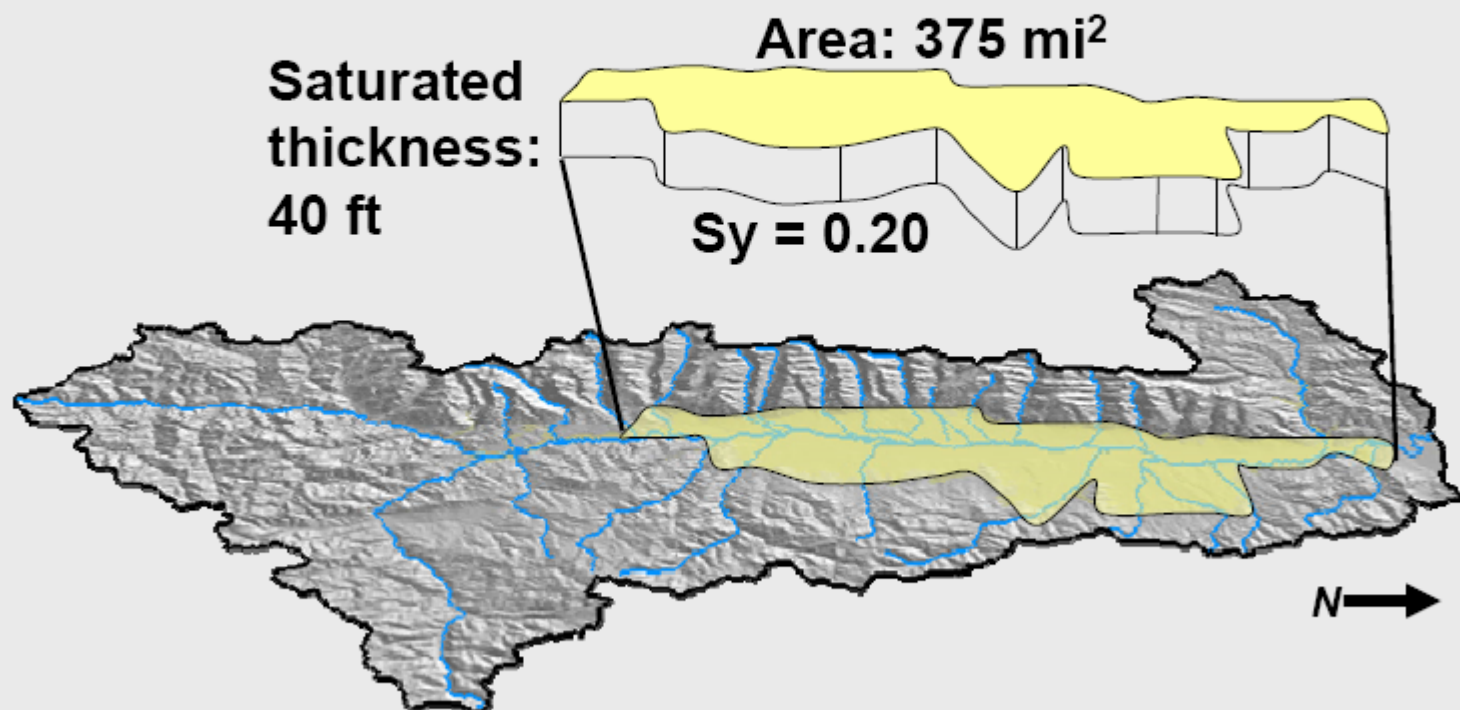


Examples of Low Flows in Closed Basins



Ground-Water Storage shallow basin-fill

Volume = (area of the aquifer) x (saturated thickness) x (specific yield)



628 Billion Gallons

Number of Days the Clark Fork at Noxon Rapids That Avista Corp.'s Water Rights Are Exceeded Each Year (50,000 CFS)

